

DATE: June 12, 1989

TO: Office of Water Programs Staff

THRU: Eric H. Bartsch, P.E., Director
Office of Water Programs

FROM: Allen R. Hammer, P.E., Director
Division of Water Supply Engineering

SUBJECT: Water - Procedure - Sample Collection/Analysis -
Required Chemical Analysis

Replace: Appendix 17G, Community Column (stopping at
Radioactivity) of WM 432

A. Source Development Samples - Community PWS

In accordance with 8.02.02 of the Waterworks Regulations (1982) each water source being considered for development as a waterworks source shall be analyzed for those contaminants listed on revised Appendix 17G-1. These analyses may be performed by DLCS or by any DCLS certified laboratory that normally performs drinking water analysis. This list includes both MCLs and Water Quality (but non-MCL) contaminants. No new water source may have approved construction plans or be put into operation without having this complete analysis on file.

The analysis should be available at the preliminary engineering conference.

B. Standard Chemical Compliance Samples (every 3 years) - Community PWS

In accordance with Sections 4.04, 4.06 and 5.04 of the Waterworks Regulations (1982), waterworks' general distribution compliance samples shall include the parameters listed on Appendix 17G-2. These analyses must be performed by DCLS or a DCLS certified laboratory. Those contaminants listed that are not MCLs are required to evaluate potentially changing water characteristics.

C. Other Compliance Contaminants such as TTHM's, VOC's, UC's, radiological and bacteriologicals have their own special required compliance sampling schedule.

RBT/edc

cc: DCLS
Certified Laboratories (Chemical)

SOURCE DEVELOPMENT - MINIMUM CHEMICAL PARAMETERS
REQUIRED FOR NEW SOURCE DEVELOPMENT

I. INORGANIC

A. MCLs (primary)

arsenic
barium
cadmium
chromium
fluoride
lead
mercury
nitrate (ASN)
selenium
silver

B. MCLs (secondary)

chloride
copper
foaming agents (MBA)
iron
manganese
sodium
sulfate
zinc
corrosivity (AI, LI)

C. Water Quality

*antimony
alkalinity
- total
- bicarbonate
- carbonate
aluminum
calcium
magnesium
potassium
hardness (EDTA)
hardness
Mg
Ca
Mg + Ca
total
hydrogen sulfide
*nickel
nitrogen
- ammonia
- nitrite
- total kyeldahl
phosphate
- total (AsP)
- ortho (AsP)
silica

II. ORGANIC

A. MCLs (primary)

endrin
lindane
methoxychlor
toxaphene
2, 4-D
2, 4, 5-TP (silvex)
benzene
*vinyl chloride
carbon tetrachloride
1, 2-dichloroethane
trichloroethylene
1,1-dichloroethylene
1,1,1-trichloroethane
para-dichlorobenzene

B. MCLs (secondary-proposed)

ortho-dichlorobenzene
ethylbenzene
pentachlorophenol
styrene
toluene
xylene (total)

C. Surface Water Only

TTHM formation potential

III. PHYSICAL QUALITY

- | | |
|------------------------|------------------|
| A. MCLs (secondary) | B. MCL (primary) |
| color | turbidity |
| pH | |
| total dissolved solids | |
| volatile (550°C) | |
| fixed (550°C) | |
| odor | |

IV. RADIOLOGICAL (MCL - primary)

1st quarterly sample must have been submitted. Due to reporting delays, results do not have to be in to approve source for development. Such approvals should mention the pending results as a possible but unlikely complication.

*Should be reported if value is generated in metals analysis.
+Run if any other VOC is found.

RATIONALE FOR INCLUSION IN SOURCE DEVELOPMENT SAMPLE ANALYSIS FOR SOME NON-MCL CONTAMINANTS

- | | | |
|------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alkalinity | - | Basic indicator of a natural water's buffering capacity. Needed to calculate corrosion indices, and important in any treatability study. |
| Aluminum | - | Important base line data. A standard for aluminum will eventually be promulgated. It is suspected of having a direct relationship with Alzheimer's Disease. |
| Antimony | - | Provides base line information but is included on the list solely because a value is generated in the routine automated metals analysis. |
| Calcium | - | Valuable in evaluating corrosivity and in calculating hardness. |
| Hardness | - | Basic indicator of water quality. Needed to evaluate corrosivity and calculate corrosion indices. |
| Hydrogen Sulfide | - | Causes significant taste and odor problems. |
| Nickel | - | Same as antimony |
| Nitrogen Series | - | Good general indicators of sanitary quality of water, Cl_2 demand, organic vs inorganic content, and is a nutrient that often causes or limits plant growth in a water. |
| Phosphate Series | - | A nutrient that indicates water pollution in a raw source. Higher values limit some treatment options. |
| Potassium | - | This is often a significant contributor to total dissolved solids and could be important in the evaluation of treatability. |
| Silica | - | May indicate fine sand pumpage. Severely affects the use of membrane treatment technologies. |
| TTHM Formation Potential (surface waters only) | - | An indicator of a potential future problem. High values may suggest a seasonal sampling. |
| Turbidity | - | Excellent indicator of a change in water quality, important base line data point. May serve as indicator of surface contamination or influence on a source. |

COMPLIANCE - CHEMICAL PARAMETERS REQUIRED
FOR THE ONCE EVERY (3) YEAR SAMPLE*

I. INORGANIC

arsenic	corrosion index (LI, AI)
barium	pH
cadmium	alkalinity
chromium	- total
lead	- bicarbonate
manganese	- carbonate
mercury	hardness
selenium	- EDTA
silver	- calcium
copper	- magnesium
iron	fluoride
zinc	color (APHA)
sodium	odor
	sulfate
	nitrogen-nitrate (AsN)
	chloride

II. PHYSICAL

pH
turbidity
total dissolved solids
 volatile
 fixed

III. NOTE. Other contaminants such as TTHMs, VOCs, UCs, radiological and bacteriological contaminants have their own special required sampling schedules.